LITTLE NACHES RIVER RIPARIAN AND IN-CHANNEL HABITAT ENHANCEMENT PROJECT 9705000

SHORT DESCRIPTION:
Improve and restore degraded habitat and riparian conditions in the Little Naches River through the placement of large woody debris and rock to enhance pool formation and retention of spawning gravels, construction of bank deflectors to reduce erosion and provide velocity refugia, revegetation of impacted riparian sites, and placement of barriers to restrict vehicular damage in riparian areas.

SPONSOR/CONTRACTOR: YIN
Yakama Indian Nation Fisheries Program
Lynn Hatcher, Fisheries Program manager
Toppenish, WA 98948
509/865-6262

SUB-CONTRACTORS:
Multiple private and public sub-contractors as needed to complete tasks of the project. The Wetchee National Forest (Naches Ranger District) is expected to provide long term maintenance to the project.

GOALS

GENERAL:
Supports a healthy Columbia basin, Maintains biological diversity, Increases run sizes or populations, Provides needed habitat protection

ANADROMOUS FISH:
Habitat or tributary passage

NPPC PROGRAM MEASURE:
no response

RELATION TO MEASURE:
Unknown

TARGET STOCK	LIFE STAGE	MGMT CODE (see below)
Naches River Summer Steelhead	Spawning, egg incubation, alevin development, juvenile rearing both summer and winter	N, W
Naches River Spring Chinook	Spawning, egg incubation, alevin development, juvenile rearing both summer and winter, adult holding	N, W

AFFECTED STOCK	BENEFIT OR DETRIMENT
Rainbow Trout	Beneficial
Cutthroat Trout	Beneficial
Bull Trout	Beneficial

BACKGROUND

STREAM AREA AFFECTED
Stream name:
Little Naches River
Stream miles affected:
12
Hydro project mitigated:
Unknown

LAND AREA INFORMATION
Subbasin:
Naches River
Land ownership:
public; USFS
Acres affected:
~240 acres
Habitat types:

N/A, for wildlife projects

ADAPTIVE MANAGEMENT IMPLICATIONS:
Past monitoring in this project area by the Yakama Nation and the USFS has identified the lack of rearing and adult holding habitat, infrequent velocity refugia for alevins and juveniles, degraded spawning gravel quality, impacted riparian areas, and summer water temperature concerns. This information initiated plans for restoration and enhancement work. additional monitoring proposed through this project will further quantify existing conditions and benefits attained through restoration work. The monitoring data will also be used to determine if target objectives for riparian conditions and in-channel habitat has been accomplished with the work. This knowledge can then be applied to future projects to increase their efficiency and benefits.

PURPOSE AND METHODS

SPECIFIC MEASUREABLE OBJECTIVES:
The objective of the project is to improve spawning, rearing and holding habitat, stabilize stream banks and channels, revegetate impacted riparian sites with beneficial deciduous and coniferous species, and deter public damage to riparian areas and the stream channel. The project work is also expected to improve water quality conditions by reducing bank erosion, filtrating and storing fine sediments, and augmenting canopy cover for temperature moderation. Through these restoration efforts, available habitat for juvenile rearing, velocity refugia, and adult holding is anticipated to increase by two-three fold in the treatment segments and will be measurable. Ambient monitoring protocol will be conducted before and after project implementation to assess whether target objectives have been attained.

CRITICAL UNCERTAINTIES:
It is expected that the project will provide immediate benefits to fish through habitat enhancement, but the exact gains will not be known until monitoring is completed. In addition, some benefits will be dependent on time and weather conditions. For example, optimal benefits from revegetation of channel margins and riparian areas will take several years for the plants to attain desired height and root mass. In addition, flows from abnormal weather patterns (both summer lows and peak runoff) may cause delays to achieving target objectives.

BIOLOGICAL NEED:
A deficiency of in-channel pool and large woody debris frequency, quality spawning gravel, velocity breaks for juvenile and adult holding, and overhead cover has been identified in the mainstem of the Little Naches River by the U.S. Forest Service and the Yakama Nation. In addition, some riparian areas along these streams are lacking in ground cover, long-term recruit able trees, shade, and bank stability. With all of these existing factors in place, fish populations have been impacted. Summer run steelhead and spring run chinook salmon stocks are listed as depressed in the Naches River (SASSI 1992). Strong arguments can be made that the spring chinook status is actually critical with recent precipitous declines in returning adults. Restoration work will provide additional critical habitat primarily for alevin development and juvenile rearing, but will also increase spawning and adult holding habitat.

ALTERNATIVE APPROACHES:
Individually treating the riparian stands or the in-stream conditions was considered. This approach has been tried in other areas and has had limited success. This project proposes to restore both habitat and riparian conditions. Work will continue with landowners through watershed analysis and monitoring to correct upslope and headwater management problems. In order to maximize benefits to fish habitat, cumulative impacts in the drainage must be assessed and addressed, as this project proposes to do.

JUSTIFICATION FOR PLANNING:
N/A, ongoing project for implementation with effectiveness monitoring

METHODS:
The project area lies entirely within the Wenatchee National Forest, Naches Ranger District. Cooperation and coordination will continue with the Forest to develop, design, implement and monitor the restoration project sites. The Forest has completed both the Environmental Assessment and Watershed Analyis which will provide further guidance to the project. All specific project

sites will have a design and monitoring plan to be completed by the grantee and the USFS. Monitoring will be conducted both before and after implementation of restoration work. Monitoring work will follow standardized Ambient Monitoring Protocol (TFW-AM9-94-001). The pre-project monitoring will assess the habitat features (large woody debris, pool area and frequency, residual pool depth, spawning gravel quality), channel characteristics (wetted and bankfull width and depth), riparian condition (canopy cover, species composition), and limited fish population estimates (electroshocking, snorkeling, spawner surveys). Design plans will characterize existing conditions, actions needed to restore the channel and riparian areas to target conditions, logistics to complete work, and expected benefits from the work. Where degraded channel conditions are identified, restoration work may include placement of large woody debris, boulders, and/or bank deflectors. In areas of active bank erosion, bio-engineering practices may be utilized such as establishment of dense woody vegetation for rooting strength, placement of rock at toes of erosion, and construction of bank deflectors. Within riparian areas, stands with sparse or no vegetation may be interplanted with appropriate coniferous or deciduous species to provide future wood recruitment, canopy cover to moderate stream temperatures, allochthonous nutrient delivery, and bank stability. Upon review and acceptance of the plans, the work will be completed by the grantee or a subcontractor. The work will be evaluated by the grantee for its consistency in meeting design plans. Post-project monitoring will then be conducted to assess whether target objectives were attained.

PLANNED ACTIVITIES

SCHEDULE:

Planning Phase **Start** 1997 **End** 2001 **Subcontractor** possibly the USFS

Task Initial monitoring has begun and will be ongoing through September of 1998 on multiple stream segments. Design planning has also begun and will be completed by September of 1998, as monitoring data is available and has been analyzed for treatment stream segments. Final or post monitoring is scheduled for the spring and summer of 2001.

Implementation Phase **Start** 1997 **End** 2001 **Subcontractor** various

Task Stream Channel and Habitat Work: Large woody debris and boulder placement, bank deflector construction, in-channel structures, revegetation and placement of rock at toes of eroding banks; Riparian Enhancement: Vegetation planting, construction of barricades to restrict vehicular use. All work to be completed from 1997-2001

O&M Phase **Start** 1999 **End** 2001 **Subcontractor** various

Task Additional work as needed to maintain in-stream and riparian projects.

PROJECT COMPLETION DATE:
2001

OUTCOMES, MONITORING AND EVALUATION

SUMMARY OF EXPECTED OUTCOMES

Expected performance of target population or quality change in land area affected:
Through these restoration efforts, habitat features that are limiting fish populations are expected to, at a minimum, be increased by two to three fold. This increase in critical habitat area should boost survival and production of anadromous and resident salmonid populations. Monitoring work will further determine the net benefits of the project and identify limitations or areas of improvement.

Present utilization and convservation potential of target population or area:
Most of the project area is currently used for timber management and recreational purposes. Many of the fish populations in the drainage are substantially depressed, partly due to past and current impacts to habitat, water quality and riparian stands. Existing conditions in some locations are deficient in critical habitat features and adequate riparian vegetation.

Assumed historic status of utilization and conservation potential:
Historically, the project area stream is assumed to have contained quality riparian and habitat conditions with considerable pool area and depth, spawning gravels, in-channel woody debris, and adequate water temperatures. Photo records from even the 1950's showed impressive riparian timber stands and little disturbance to the channel. Historical conditions are assumed to have

been similar to the American River which has received only minor management and still contains productive chinook and steelhead populations along with quality riparian and habitat conditions. Historical information on run sizes in the Naches River and its tributaries indicates that considerable fish production occurred and quality habitat would have been necessary to support these numbers.

Long term expected utilization and conservation potential for target population or habitat:
The long term goal for this project stream is to restore habitat and riparian stands to conditions similar to historical levels and favorable for salmonid life history requirements.

Indirect biological or environmental changes:
None known

Physical products:
In the project stream segments, restoration work is expected to increase available habitat for juvenile rearing, adult holding, and velocity refugia by 2-3 times over existing conditions. To meet this goal it is expected that approximately 15 sites will need placement of rocks, large woody debris, and/or bank deflectors. Roughly 5 additional sites may also need bank erosion control proactices. Riparian restoration/revegetation work is expected to be performed on scattered locations over a total stream treatment length of 3000 feet. In areas where vehicular damage is occurring on riparian areas and stream banks, approximately 1000 feet of barricades will need to be constructed.

Environmental attributes affected by the project:
Increased pool area, pool depth, spawning gravel retention, and velocity refuge form in-channel placement of rock, large woody debris and bank deflectors. Decreased fine sediment delivery to the stream system by stabilizing eroding banks and enhancing riparian vegetation with its root mass and filtration capability. Moderation of water temperatures with improved canopy cover and deeper pool habitat. Reduced ground disturbance and compaction from restricted vehicular use.

Changes assumed or expected for affected environmental attributes:
Near term, the project's plan to introduce boulders, large wood and bank deflectors to the channel is expected to enhance juvenile rearing and adult holding habitat by creating additional pool area and depth, and velocity breaks for refuge during peak flows. This material will also capture and retain spawning gravels as well as create overhead cover from water turbulence. Deflectors and bank stabilization practices should also curb erosion, thereby reducing fine sediment delivery. Riparian revegetation should also begin to reduce fine sediment delivery and stabilize banks and channels.Long term, riparian restoration and vehicular barricades should increase canopy cover for moderating stream temperatures, eventually supply large woody debris recruitment to the stream, and maintain stable banks and channels.

Measure of attribute changes:
Exact reduction level on fine sediment delivery is unknown. However, improvements in riparian conditions, stabilization of eroding banks, and restricted vehicular traffic should substantially reduce fine sediment routing to spawning and rearing habitat.

Assessment of effects on project outcomes of critical uncertainty:
Monitoring of conditions before and after project completion should quantify if goals and objectives have been attained.

Information products:
Monitoring data, monitoring summary and findings, analysis of limiting habitat and riparian factors, project design plans, compliance evaluation of project implementation, and evaluation of project results and its comparison to expected goals and objectives.

MONITORING APPROACH
Review of the monitoring data and results should provide the region with the necessary information to evaluate project performance and ability to enhance riparian and habitat conditions in the Little Naches River.

Provisions to monitor population status or habitat quality:

The monitoring component of the project should quantify changes in riparian and habitat conditions. Annual spawner surveys and supplemental population estimates of juvenile fish will provide further information on the status of target stocks.

Data analysis and evaluation:
The monitoring data collected before and after projecto completion will be compared. Selected parameters (pool area, LWD frequency, residual depth, stream width and depth, canopy cover, fish density) of the two data sets will be evaluated for statistical difference. The post completion monitoring data will also be evaluated to determine if targets for habitat and riparian condition have been attained.

Information feed back to management decisions:
Monitoring data collected prior to project implementation will guide and focus planning efforts. Riparian restoration and habitat improvement designs will be tailored to the findings of the monitoring.

Critical uncertainties affecting project's outcomes:
Partial enhancement of riparian and habitat conditions is expected with this project, but the time frame will be dependent upon flow regimes and weather conditions after project completion. Future flow regimes and weather can not be generally predicted or resolved. However, the project's outcome could be better assessed if monitoring was conducted beyond the 5 year time frame of the project. Some habitat and riparian changes may not be apparent in the 5 year period (eg riparian canopy improvement). The exact level of benefit to habitat and riparian conditions is also uncertain, though anticipated. Monitoring as described for this project, and conducted on similar restoration work, should provide greater prediction capability of future projects.

EVALUATION
Assessment of monitoring results should allow the region to evaluate the effectiveness of the project work. The monitoring data , analysis and report should describe how riparian and habitat conditions have been affected with the project work. The project's success should be apparent with improved frequency and/or quality of habitat and riparian conditions, as quantified with project's success should be apparent with improved frequency and/or quality of habitat and riparian conditions, as quantified with the monitoring.

Incorporating new information regarding uncertainties:
Any new information that becomes available will be assessed and considered. The information will be factored into project planning, design and implementation.

Increasing public awareness of F&W activities:
The project's tact of working with other agencies and landowners will increase awareness and benefits of restoration work. Positive results of the work will also be communicated to the local community. At most of the project sites, the work will be visible to the general public due to proximity to Forest Service Road 1900 and State Highway 410. Possibly, interpretive signs could be placed near project sites to inform the public of the work and its benefits to fish populations in the drainage.

RELATIONSHIPS

RELATED NON-BPA PROJECT	RELATIONSHIP
North Fork LWD Project/USFS	Provides additional spawning and rearing habitat upstream of this project
Crow Creek LWD Stream Project/ USFS	Provides additional tributary spawning and rearing habitat in close proximity to this project
Little Naches Side Channel Enhancement/ USFS	Provides off channel summer and winter rearing in close proximitiy to this project

OPPORTUNITIES FOR COOPERATION:
Coordination is continuing on this project with the U.S. Forest Service and Washington Department of Fish and Wildlife. Both agencies are interested in rehabilitating riparian areas and fisheries habitat and have expressed a desire to be involved with

project design and completion. An Environmental Assessment has been completed by the Forest Service for this project and watershed analysis is also finished. Cost sharing or funds may be available on this project from the U.S. Forest Service, but is not guaranteed.

COSTS AND FTE

1997 Planned: $89,600

FUTURE FUNDING NEEDS: **PAST OBLIGATIONS (incl. 1997 if done):**

FY	$ NEED	% PLAN	% IMPLEMENT	% O AND M
1998	$89,600	20%	80%	0%
1999	$89,600	0%	95%	5%
2000	$89,600	0%	90%	10%
2001	$16,800		0%	10%

90, monitoring in 2000

FY	OTHER FUNDING SOURCE	AMOUNT	IN-KIND VALUE
1998	USFS (Staff Time) WDFW (Staff Time)	$5,000	
1999	USFS (Staff Time) WDFW (Staff Time)	$5,000	
2000	USFS (Staff Time) WDFW (Staff Time)	$5,000	
2001	USFS (Staff Time) WDFW (Staff Time)	$3,000	

OTHER NON-FINANCIAL SUPPORTERS:
Plum Creek Timber Company

LONGER TERM COSTS: Not expected, although monitoring could be extended beyond 2002 to provide long term info

1997 OVERHEAD PERCENT: 24.2%

HOW DOES PERCENTAGE APPLY TO DIRECT COSTS:
Overhead % not provided so BPA appended older dataTotal direct project cost

SUPPLEMENTAL ANADROMOUS FISH EVALUATION FACTORS:
The project continues work on monitoring, planning, and implementation of habitat improvement and riparian restoration projects to enhance anadromous stocks.

SUPPLEMENTAL RESIDENT FISH EVALUATION FACTORS:
Though the project is targeted toward improving conditions for anadromous stocks, the work will also benefit resident trout habitat and riparian areas.